

SHEET INDEX

CONTENTS	SHEET NO.	SHEET ISSUE
SHEET INDEX		
SYMBOL		
MANUFACTURING REFERENCES		
NOTES	1	5
USED-ON TABLE		
CURRENT DRAIN		
RECORD OF CHANGES		
CIRCUIT SCHEMATIC	2	5
COMPONENT LIST	3	5
	4	5
	5	5
CIRCUIT DESCRIPTION	6	5

RECORD OF CHANGES

DWG. ISS.	PREV. EDITION	STD.	REV. DISC.	SEE NOTE

SYMBOL
TAPE UNIT CONTROLLER, BD 0
ELEMENT IDENT

TERM. MOD.	FUNCT.	TERM.	LOC.	TERM. MOD.	FUNCT.	TERM.	LOC.
CARTHD	I	201	243	TRHD	#	115	347
CRCRO	I	114	242	TRHD1	#	302	244
DATEIO	I	219	347	WATIO	#	100	243
DOINHO	I	014	347	WATPO	#	109	249
FMD	I	008	343	WSTSTAT1	#	107	343
GPD	I	100	243	WSTSTAT1	-I	111	343
INWTSO	I	112	242	INFOO	#1	311	243
LPEW	I	300	342	INFOO	#1	211	244
MAINT1	I	316	348	LPEW	#1	001	312
ROQDIO	I	205	348	STAT1	#1	312	241
RWDINGAD	I	019	342	+S	P	000	348
				+S	P	119	348
SSIO	I	117	240	GRD	G	200	346
STREQO	I	105	240	GRD	G	319	346
TMDIO	I	118	346				
TRIO	I	018	346				
TTMSTPO	I	216	240				
TRDIO	I	301	244				
TUCROED	I	206	241				
TUCRO1	I	015	241				
WTTED	I	110	246				
CLKO11	#	011	245				
CLKO2	#	016	246				
ERO	#	006	242				
GFO	#	303	244				
INFOO	#	214	344				
INFOO	#	315	346				
INFOO	#	317	346				
INF110	#	017	348				
INF120	#	217	348				
INF130	#	218	341				
INF140	#	013	343				
INF150	#	012	340				
LBEN1	#	101	242				
NANED1	#	009	348				
NOO	#	113	345				
PSTAT1	#	106	241				
ROO	#	007	242				
RWDINGAD	#	010	342				
SYWCO	#	306	240				

SUPPORTING INFORMATION

CATEGORY	NO.
CIRCUIT PACK CODE	JR19
CONNECTOR ON FRAME	947A OR 947C
ACCEPTABLE SERIES	6

CURRENT DRAIN: 405mA

SHEET INDEX NOTES

- WHEN CHANGES ARE MADE IN THIS DRAWING ONLY THOSE SHEETS AFFECTED WILL BE REISSUED.
- THIS SHEET INDEX WILL BE REISSUED AND BROUGHT UP TO DATE EACH TIME ANY SHEET OF THE DRAWING IS REISSUED, OR A NEW SHEET IS ADDED.
- THE ISSUE NUMBER ASSIGNED TO A CHANGED OR NEW SHEET WILL BE THE SAME ISSUE NUMBER AS THAT OF THE FIRST SHEET.
- SHEETS THAT ARE NOT CHANGED WILL RETAIN THEIR EXISTING ISSUE NUMBER.
- THE LAST ISSUE NUMBER OF THE FIRST SHEET INDEX IS RECOGNIZED AS THE LATEST ISSUE NUMBER OF THE DRAWING AS A WHOLE.

NOTES:

- $\frac{1}{2}$ GROUND RETURN
- UNLESS OTHERWISE SPECIFIED:
RESISTANCE VALUES ARE IN OHMS
CAPACITANCE VALUES ARE IN MICROFARADS
(VALUES PRECEDED BY THE SYMBOL - (PLUS)
OR - (IN HUS) ARE IN VOLTS

- BATTERY AND GROUND TERMINALS FOR INTEGRATED CIRCUITS

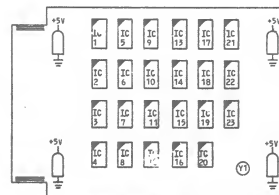
IC CODE	VCC	LRD
41BE	16	7, 8
41BP	16	8
41BR	16	7, 8
41CB	16	8
41CC	16	7, 8
41CJ	16	8
41CL	16	8
41U	16	8
41W	16	8
41YD	9	16

- BATTERY AND GROUND TERMINALS FOR THIS CIRCUIT PACK ARE AS FOLLOWS:

FUNCTION	TERMINAL
+S	119, 000
GRD	319, 200

- HORIZONTAL MOUNTING CENTERS AT 1.00 INCH.

- INTEGRATED CIRCUIT LOCATION GUIDE: (COMPONENT SIDE SHOWN).



UNNUMBERED COMPONENTS ARE FILTER CAPACITORS

NOTICE—NOT FOR USE OR DISCLOSURE OUTSIDE THE BELL SYSTEM EXCEPT UNDER WRITTEN AGREEMENT.

ISSUE 5A

119B

AT&T STANDARD

JR19 CIRCUIT PACK

CARTRIDGE TAPE TRANSPORT CONTROLLER, BOARD 0

CIRCUIT

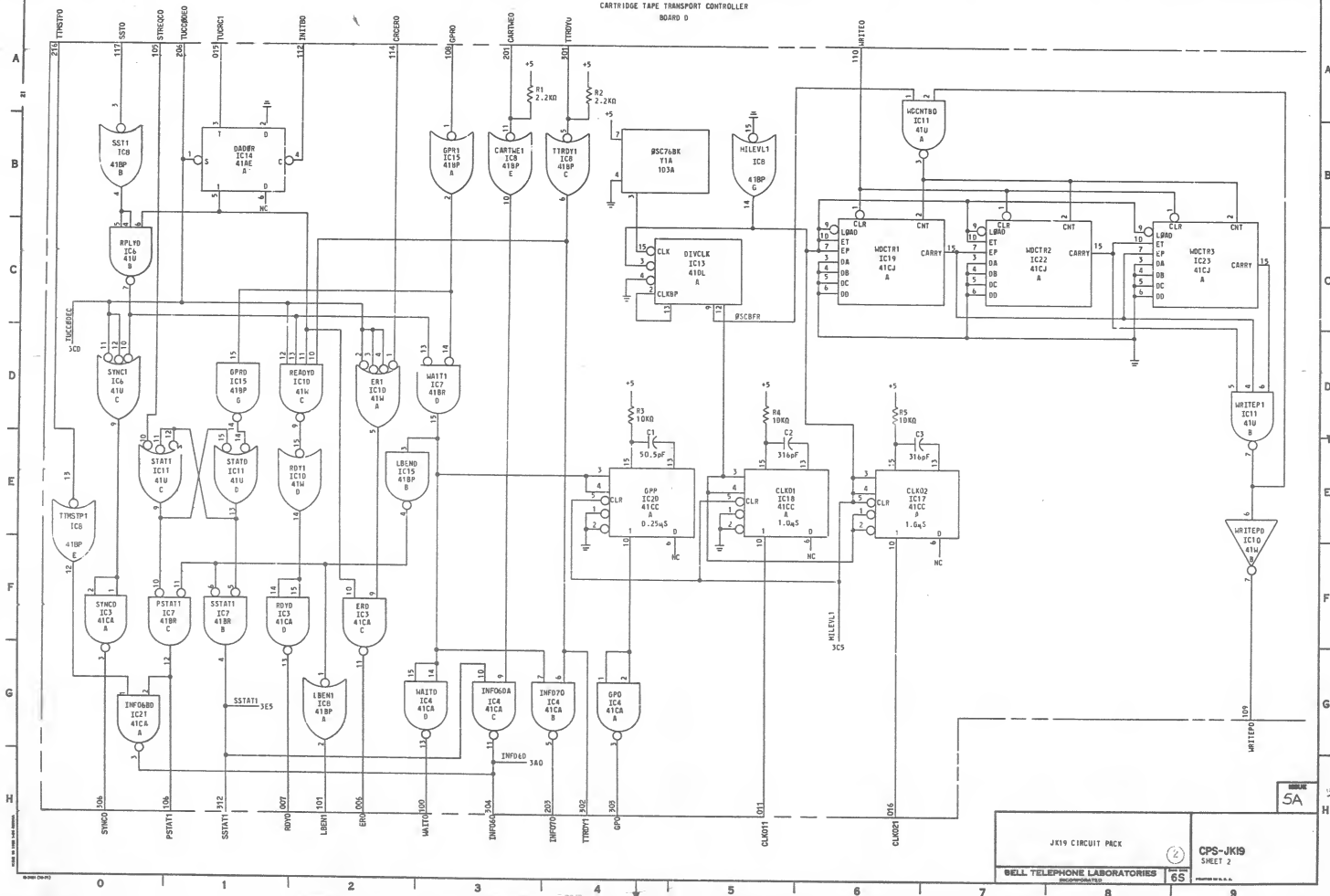
CPS-JK19

6 SHEETS

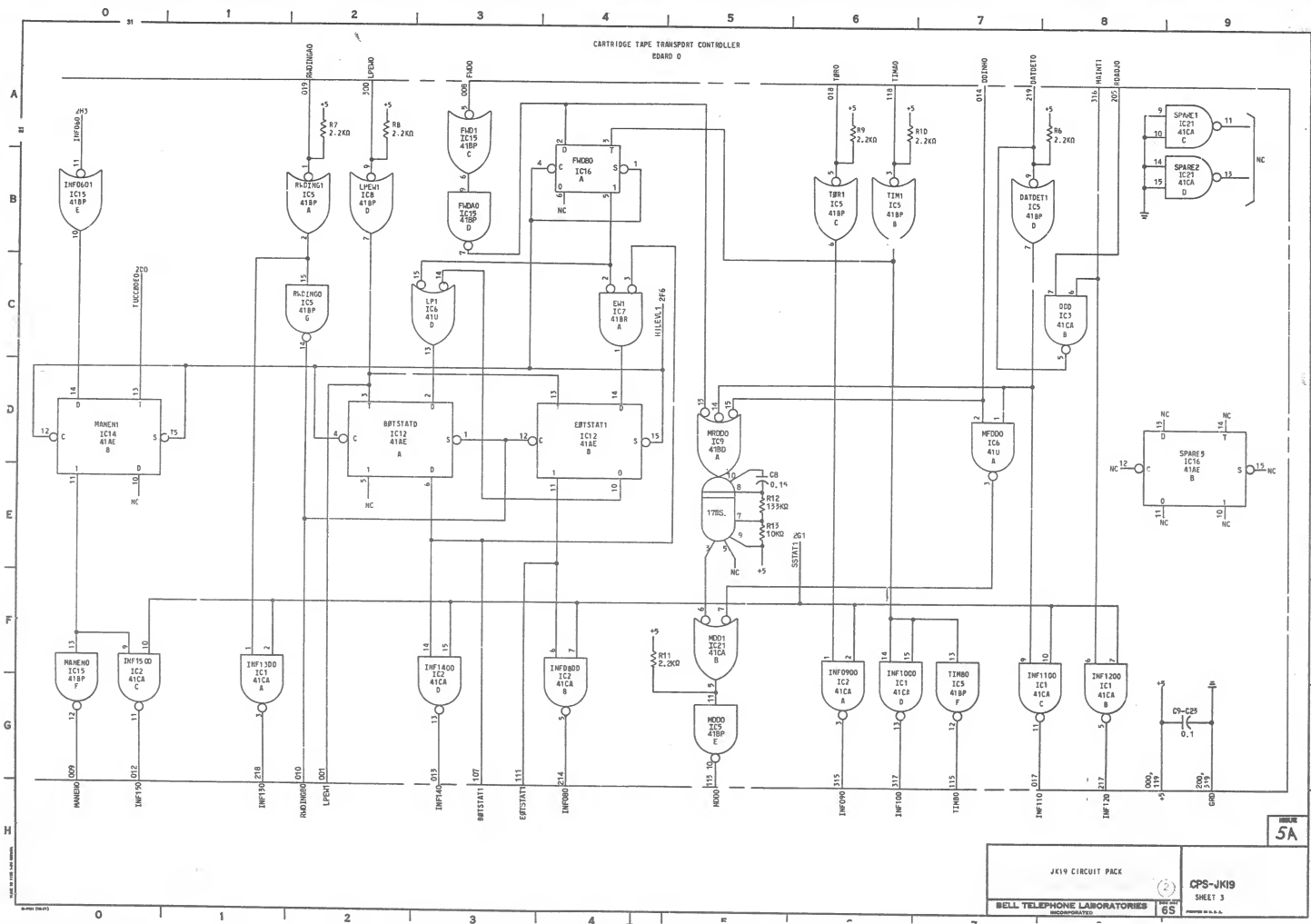
BELL TELEPHONE LABORATORIES

6S

CARTRIDGE TAPE TRANSPORT CONTROLLER BOARD D



CARTRIDGE TAPE TRANSPORT CONTROLLER
BOARD 0



COMPONENT LIST

INTEGRATED CIRCUIT

LOC CODE ELEM ID	IC1 41CA		IC2 41CA		IC3 41CA		IC4 41CA		IC5 41BP		IC6 41U		IC7 41BR		IC8 41BP		IC9 41BD		IC10 41W		IC11 41U		IC12 41AE	
	DESIG	SH LOC	DESIG	SH LOC	DESIG	SH LOC	DESIG	SH LOC	DESIG	SH LOC	DESIG	SH LOC	DESIG	SH LOC	DESIG	SH LOC	DESIG	SH LOC	DESIG	SH LOC	DESIG	SH LOC	DESIG	SH LOC
A	INF1300	361	INF0900	366	SYNCO	2F0	GPO	264	RHOEN1	382	MFDDO	307	EWI	3C4	LBEN1	2C2			EX1	202	WOCN80	246	WRTSTATO	307
B	INF1200	369	INF0800	364	ODD	3C8	INFOTO	264	TJH1	386	RPLYO	2C0	SSTAT1	2F1	SST1	280	MRDDO	3E5	WRITEP1	209	WRTSTAT1	304		
C	INF1100	368	INF1500	360	END	2F2	INF060A	263	TRM1	388	SYN1	200	PSTAT1	2F1	TTRDY1	284			READTO	202	STAT1	2E1		
D	INF1000	366	INF1400	363	NOTO	2F2	WRTD	263	QATBLT1	387	LPI	3C3	WRT1	203	LPEU1	282			RD11	2E2	STATO	2E1		
E																								
F																								

CAPACITOR

DESIG	CODE
C1	KS-20813 L3,90,39F
C2,C3	KS-20813 L4,314FF
[4]C4-C7	601A,5
C8	KS-20800 L1,0,15
[15]C9-C23	KS-21901 L1,0,1

CLOCK OSCILLATOR

DESIG	CODE
Y1A	109A 756,0000KZ

RESISTOR

DESIG	CODE
R1,R2	KS-20616 L1A,2200
R3,R4,R13	KS-20616 L1A,1000
R5-R11	KS-20616 L1A,2,200
R12	KS-20616 L1A,10000

PAGE
5A

JK19 CIRCUIT PACK

BELL TELEPHONE LABORATORIES
INCORPORATED

CPS-JK19

SHEET 4

6S

CIRCUIT DESCRIPTION A. FUNCTIONAL DESCRIPTION

JK19 IS ONE OF THE FOUR BOARDS WHICH MAKE UP THE CARTRIDGE TAPE TRANSPORT CONTROLLER (CTC). THIS BOARD CONTAINS MOST OF THE HANDSHAKING LOGIC, THE 2-PHASE WRITE CLOCK, WRITE DELAY TIMING, AND MOST OF THE SECONDARY STATUS OUTPUTS. A BLOCK DIAGRAM OF JK19 IS SHOWN IN FIG. 1.

THE CTC ADDRESS LATCH ENABLES THE SPI AND BT HANDSHAKING LOGIC WHENEVER THE SERIAL REQUEST INTERFERE (SPI) TRANSMITS A COMMAND TO THE CTC. IT MAINTAINS THE ENABLE STATE UNTIL A COMMAND IS ISSUED FROM THE SPI WHICH DOES NOT CARRY THE CTC ADDRESS CODE, OR A TDC INITIALIZE COMMAND IS ISSUED.

THE SPI AND BT HANDSHAKING LOGIC WHICH IS ENABLED BY THE CTC ADDRESS LATCH, GENERATES THE PROPER HANDSHAKING SIGNALS UNTIL THE CTC RECEIVES A COMMAND OR A STATUS REQUEST FROM THE SPI. THE SYNCO AND END ARE ENABLED, INDICATING TO THE SPI THAT THE COMMAND HAS RECEIVED STATUS INFORMATION. THE SYNCO LEAD IS ENABLED. SYNCO WILL RETURN TO ITS DISABLED STATE AT THE TRAILING EDGE OF THE COMMAND PULSE. IF THE CIRCUIT LOCATED ON JK19 IS IN AN ERROR CONDITION, THE END LEAD WILL REMAIN ENABLED UNTIL THE CTC IS TAKEN OFF-LINE (THE ADDRESS LATCH IS DISABLED) OTHERWISE, IT RETURNS TO ITS DISABLED STATE AT THE TRAILING EDGE OF THE COMMAND PULSE. WHEN THE CTC IS ADDRESS (ON-LINE) AN ACTIVE SIGNAL ON THE STATUS-REQUEST LEAD WILL CAUSE A PULSE ON THE GENERATE-PARTY LEAD, AND ENABLES THE WAITO AND SYNCO LEADS. THE PULSE ON THE GENERATE-PARTY LEAD IS FED TO THE BUS TERMINATOR (BT) CIRCUIT, REQUESTING THAT PARITY BE GENERATED FOR THE 16 BITS OF STATUS INFORMATION THE CTC HAS LOADED ONTO THE BUS. ENABLING WAITO INDICATES TO THE SPI THAT THE STATUS INFORMATION IS NOT READY. WHEN THE BT CIRCUIT HAS RECEIVED THE STATUS INFORMATION FROM THE BUS, IT WILL GENERATE A PULSE WHICH WILL APPEAR ON THE GENERATE-PARTY REPLY LEAD. THIS PULSE CAUSES THE SPI AND BT HANDSHAKING LOGIC TO DISABLE THE WAITO LEAD AND REMOVE THE STATUS INFORMATION (INFORMATION WHICH WAS LOADED INTO THE BUS BY THE CTC) FROM THE STATUS REQUEST COMMAND WAS RECEIVED) FROM THE BUS. AT THIS POINT THE BUS WAITO LEAD HAS BEEN ENABLED BY THE BT CIRCUIT. AS SOON AS PARITY IS CALCULATED BY THE BT CIRCUIT, THE CTC STATUS, ALONG WITH PROPER PARITY, WILL BE LATCHED ONTO THE BUS BY THE BT CIRCUIT. THE WAITO LEAD WILL BE DISABLED, INDICATING TO THE SPI THAT THE INFORMATION IS READY. AS THIS INFORMATION IS RETRIEVED BY THE SPI, THE ACTIVE SIGNAL ON THE STATUS-REQUEST LEAD IS REMOVED CAUSING THE SYNCO LEAD TO BE DISABLED.

THE MANUAL-ENABLE LATCH IS ENABLED WHENEVER THE CTC RECEIVES A COMMAND WHILE THE MANUAL-ENABLE LEAD (INFO60) IS ENABLED. THE OUTPUT OF THE MANUAL-ENABLE LATCH IS FED DIRECTLY TO THE CTC AND ENABLES THE MANUAL POSITIONING WHEN ACTIVE.

THE STATUS GATING CIRCUIT LOADS CTC STATUS INFORMATION ONTO THE BUS (TO BE ACCEPTED BY THE BT CIRCUIT). WHEN IT IS ENABLED BY A STATUS REQUEST COMMAND, IT ALSO FEEDS OTHER CTC CIRCUITS WITH OPERATING STATUS INFORMATION, TAPE IN MOTION, DATA DETECT AND REMAINING STATUS.

THE TAPE POSITION STATUS CIRCUIT MAINTAINS A STATUS OF THE POSITION OF THE MAGNETIC TAPE, WITHIN THE TAPE CARTRIDGE. ITS OUTPUTS (INFO60 AND INFO40) INDICATE WHETHER THE HEAD IS BETWEEN THE LEAD POINT AND EARLY WRITING MARKERS OR AT EITHER END. DATA SHOULD ONLY BE WRITTEN ONTO TAPE BETWEEN THESE TWO MARKERS.

THE 2-PHASE OSCILLATOR PROVIDES A 2-PHASE CLOCK FOR WRITING DATA ONTO TAPE. THE 2-PHASE CLOCK OUTPUT OPERATES AT 400KHz GENERATING 1μs CLOCK PULSES FIG. 2. THE OSCILLATOR CLOCK ALSO FEEDS A WRITE SQUARE WAVE INTO THE WRITE DELAY CIRCUIT. THE WRITE DELAY CIRCUIT WHEN TRIGGERED BY A WRITE COMMAND, WILL GENERATE A 42.5% PULSE AT ITS OUTPUT WHICH IS USED TO INITIALIZE THE WRITE CIRCUITS LOCATED ON JK18.

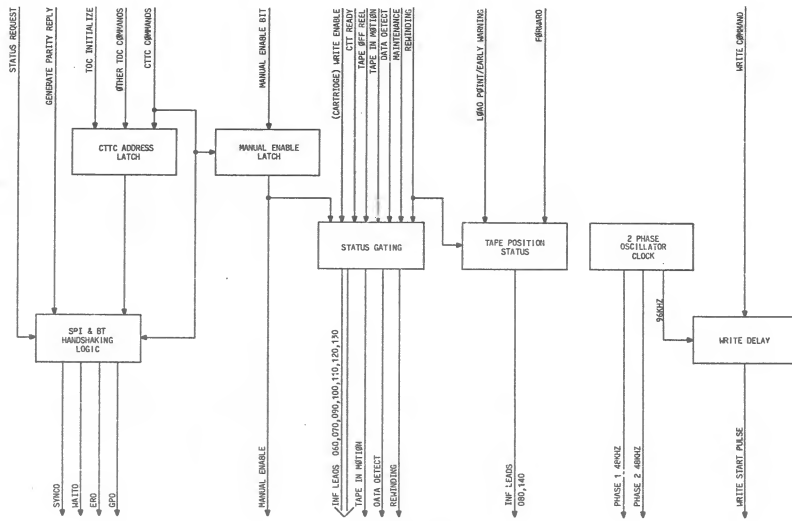


FIGURE 1 - BLOCK DIAGRAM

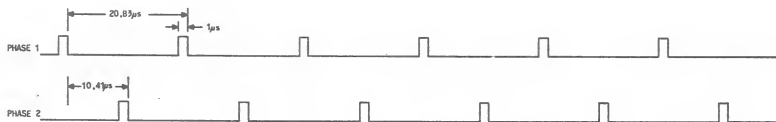


FIGURE 2 - 2-PHASE CLOCK

[illegible][illegible]

THE CHIEF DESCRIPTION

[illegible]